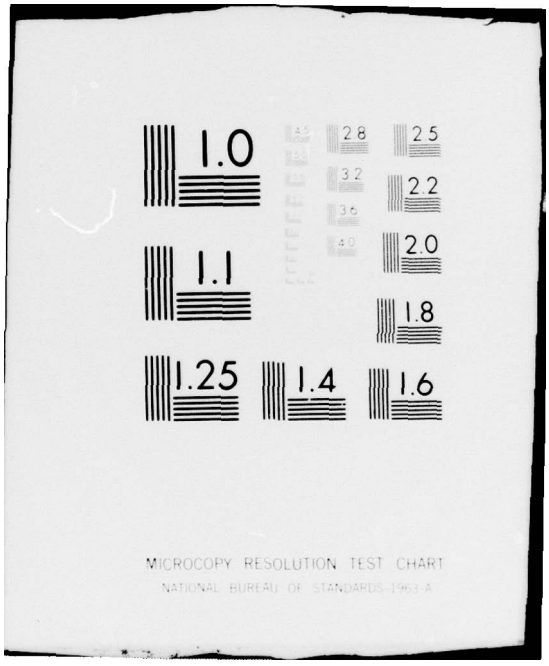
AD-A079 239 ARMY PERSONNEL RESEARCH OFFICE WASHINGTON DC F/G 5/9
EMPIRICAL TRANSSITUATIONAL MODERATORS.(U)
NOV 64 P A BANAS, P T OLSON
UNCLASSIFIED APRO-RM-64-10 NL

| OF |
AD A079239L

END
DATE FILMED
2-80
DDC


1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

Research Memorandum 64-10

EMPIRICAL TRANSSITUATIONAL MODERATORS

November 1964

U. S. ARMY PERSONNEL RESEARCH OFFICE

(14) APRO-RM-64-10

Army Project Number
2J024701A722

NCO Leaders a-17

(9) Research Memorandum 64-10

(6) EMPIRICAL TRANSSITUATIONAL MODERATORS

(10) Paul Anthony Banas, and Pauline T. Olson
Francis F. Medland, Task Leader

(12) 22

Submitted by:
Leonard V. Gordon
Chief, Behavioral Evaluation
Research Laboratory

Approved by:
J. E. Uhlaner
Director, Research
Laboratories

(11) November 1964

040650

FOREWORD

Content of this Research Memorandum constitutes a portion of a dissertation submitted to the graduate faculty of the University of Minnesota in partial fulfillment of the degree Doctor of Philosophy, March 1964.

This study deals with the selection of moderator variables. The term "moderator" is defined by the author as referring to any variable, quantitative or qualitative, which improves the usefulness of a predictor by isolating subgroups of individuals for whom a predictor or set of predictors is especially appropriate. A method is described for selecting moderator variables for use with predictors of performance in three groups--clerical, skilled, nonskilled--first, when predictors specific to the groups are employed, and second, when a more general predictor is used with all three groups.

EMPIRICAL TRANSSITUATIONAL MODERATORS

STATEMENT OF THE PROBLEM

Considerable interest has focused on the concept of the moderator variable over the past few years. The possibility of enhancing validity by identifying variables which improve the usefulness of a predictor by isolating subgroups of individuals for whom a predictor, or a set of regression weights are especially effective has attracted the attention of many psychologists. The body of literature leading up to current formulations of theory on moderator variables has been described by the author (Banas, 1964).

Evidence has seemed to indicate that the usefulness of subgrouping analysis may be limited because of the apparent specificity of moderator variables. For instance, Ghiselli (1963b) examined the similarity of moderators developed through item analysis of an inventory. With different tests predicting the same criterion for a given group, and with the same test predicting similar criteria for two different groups, the items which formed the moderators were quite different. Ghiselli concluded that moderators appear to be highly specific. Other studies--not designed expressly to investigate the specificity of moderators--have reported conflicting findings when the moderator has been used with similar samples, predictors, and criteria in different situations. If it could be demonstrated that moderators are not necessarily specific to particular situations, the potential of the moderator concept would certainly be enhanced.

The purpose of the present study was to explore the possibility of identifying one type of transsituational--or trans-predictor--moderator. Specific questions asked were: (1) Can a moderator be found that will identify more predictable and less predictable subgroups within different occupational groups when different predictors are used for each group to predict the same kind of criterion? (2) Can a moderator be found that will identify more predictable and less predictable subgroups within different occupational groups when the same predictor is used for all the groups?

METHOD

The method used was based on one proposed by Ghiselli (1956) in which absolute differences between predicted criterion score and actual criterion score are computed. Scores on experimental moderators are then correlated with the difference scores to determine the effectiveness of the moderators. The most effective moderator composite for a given sample is determined by test selection techniques.

SAMPLES

The present study was based on three groups designated clerical, nonskilled, and skilled. Each occupational group was randomly divided into an experimental sample for the development of empirical moderators and a cross-validation sample for assessment of the effectiveness of the moderators.

Individuals comprising the samples were participants in a study of work adjustment conducted by the Regional Vocational Rehabilitation Research Institute[1] at the Industrial Relations Center of the University of Minnesota.

The sampling requirements of the work adjustment project (Carlson, Davis, England, and Lofquist, 1963) stipulated one sample of handicapped persons for whom medical diagnosis of disability had been established and a control group randomly selected from nonhandicapped workers in jobs matching those of the experimental group. Samples for the moderator study included only clerical, skilled, and nonskilled workers on whom criterion data were available. Occupational classification was based on the individual's job title using the Dictionary of Occupational Titles (U. S. Department of Labor, 1949). The characteristics of the samples are presented in Table 1.

CRITERION

The criterion developed by the Regional Vocational Rehabilitation Research Institute (Carlson et al., 1963), consisted of scores on a five-item performance scale. Scores were obtained by adding the scores on an Alternation Ranking Form and the following items of a Supervisory Evaluation Form: (1) quality of work, (2) promotability, (3) recommendation for pay raise, (4) adjustment. The possible range was 5 to 23, with the higher score indicating a more satisfactory evaluation by the individual's immediate supervisor.

---

[1] The Regional Vocational Rehabilitation Research Institute (formerly known as the Regional Research Center) was established in the Industrial Relations Center, University of Minnesota, on July 1, 1959. It is a cooperative venture supported jointly by the Vocational Rehabilitation Administration and the University of Minnesota. The Institute's core research program, Work Adjustment, has three major objectives: (1) the definition and measurement of criteria of work adjustment among the physically handicapped; (2) the determination of correlates which "explain work adjustment" and (3) the development of a systematic psychology of disability.

Table 1

SEX, EDUCATION, AGE, AND DISABILITY CHARACTERISTICS OF THE CLERICAL, NONSKILLED, AND SKILLED SAMPLES

Sample	N	Median Age (Yrs.)	Median Education (Yrs.)	Handicapped (Per Cent)	Females (Per Cent)
Clerical	125	30	12	54	47
Nonskilled	116	36	12	56	1
Skilled	108	39	12	55	>1

Reliability coefficients for the performance scale were determined by Carlson et al. (1963) for samples similar to the ones used in the present study. Coefficients computed using Hoyt's analysis of variance method ranged from .77 to .85, the median being .83.

PREDICTORS

Scales of the General Aptitude Test Battery (GATB), a multifactor test battery developed by the United States Employment Service, were used in obtaining predicted criterion scores (Dvorak, 1956). The GATB yields scores in the following nine areas: Intelligence (G), Verbal (V), Numerical (N), Spatial (S), Form Perception (P), Clerical (Q), Motor Coordination (K), Finger Dexterity (F), and Manual Dexterity (M).

Results of studies cited in the GATB Manual, Section III (U. S. Department of Labor, 1962) indicate that the aptitudes of the GATB are measured reliably in situations in which the battery is commonly used. In studies conducted with samples similar to those used in this study, and with intervals between initial testing and retesting ranging from one week to one year, the coefficients of stability for most of the aptitudes were in the range of .80 to .90. Reliability coefficients of the K, F, M scales were generally lower than for the other scales.

The GATB data on aptitude for specific occupations and the occupational aptitude patterns presented in the GATB (U. S. Department of Labor, 1962) were reviewed. From these data, predictors which had previously been effective for the kind of criterion and the occupational groups being considered in this study were selected for use as predictors. The clerical (Q) scale was selected for the clerical sample, the Manual Dexterity (M)

scale for the nonskilled sample, and the Spatial (S) scale for the skilled sample. The Intelligence (G) scale had previously been effective as a predictor for the clerical and skilled samples. This finding suggested the investigation of a transsituational moderator to identify more and less predictable subgroups for different occupational groups when the same predictor is used for all the groups. Even though previous studies did not show that G was related to performance for nonskilled samples, it was decided to investigate the possibility of identifying a subgroup from the sample for which G was a predictor. With this objective, all three experimental samples were used in the development of both specific and transsituational moderators for the Intelligence (G) scale.

An overview of the literature on moderating effects indicated that interest and personality scales of the inventory type had not been explored systematically for other than college populations. Evidence reported on these populations, though not conclusive, was encouraging. The following scales of the Minnesota Multiphasic Inventory (MMPI) (Hathaway and McKinley, 1951) and of the Strong Vocational Interest Blank (Strong, 1959) were therefore selected as experimental moderators, in addition to the G scale of the GATB:

MMPI	SVIB
Hypochondriasis (Hs)	Psychologist (Ps)
Depression (D)	Engineer (En)
Hysteria (Hy)	Carpenter (Ca)
Psychopathic Deviate (Pd)	Social Worker (SW)
Interest (Mf)	Accountant (Ac)
Paranoia (Pa)	Office Man (Om)
Psychasthenia (Pt)	Occupational Level (OL)
Schizophrenia (Sc)	Masculinity-feminity (Fe)
Hypomania (Ma)	
Introversion-extraversion (Ie)	

STATISTICAL ANALYSIS

The method proposed by Ghiselli (1956) was used to determine the effectiveness of the scales as specific moderators for each of the rational predictors selected for the occupational samples. This method consists of computing the difference scores between the standard scores on the predictor and the criterion and determining the effectiveness of the scale as a moderator by correlating the scale with the absolute difference scores. The higher the scale correlates with these absolute difference scores, the more effective the scale is as a moderator. Using these correlations with the difference scores, and the intercorrelations between the scales, a composite moderator was developed for each of the predictors selected for the samples. These specific moderators were developed on the experimental samples using the modified Wherry-Doolittle test-selection technique.

The effectiveness of the scales as transsituational moderators was also determined by the method proposed by Ghiselli (1956). A composite transsituational moderator was developed for the rational predictors by (1) combining the differences, regardless of sign, between the standard scores on the clerical scale (Q) and the criterion for the clerical experimental sample, on Manual Dexterity (M) and the criterion for the nonskilled samples, and on Spatial (S) and the criterion for the skilled experimental sample; (2) obtaining the coefficients of correlation of the G scale, the scales of the MMPI, and the scales of the SVIB, with these combined difference scores; and (3) using these correlations with the difference scores, and the intercorrelations between the scales, to develop a composite transsituational moderator by the modified Wherry-Doolittle test-selection technique.

A composite transsituational moderator was developed for the G scale using the procedure described above. The difference scores were derived from the differences between the standard scores on the G scale and the standard scores on the criterion.

The number of scales retained in the multiple regression equation for each of the specific and transsituational moderators was determined by applying the Wherry shrinkage formula:

$$\bar{R}^2 = 1 - K^2 \left(\frac{N-1}{N-M} \right)$$

where $\bar{R}$ = the "shrunken" multiple correlation coefficient

K = the coefficient of alienation

N = the number of cases in the sample

M = the number of predictors

The $\bar{R}$ for M + 1 predictors is compared with the $\bar{R}$ for the M predictors: When $\bar{R}$ for M + 1 predictors does not exceed $\bar{R}$ for M predictors, the addition of predictors is stopped.

The above test applies, in the strictest sense, only when the M predictors are chosen at random from M + 1 predictors--which is not the case when predictors are added successively as in the modified Wherry-Doolittle test-selection technique. However, this method is still used widely, rather than following each test selection to its theoretical maximum, or arbitrarily selecting a specified number of tests.

RESULTS

SPECIFIC AND TRANSSITUATIONAL MODERATORS

The scales comprising the specific moderators developed for each of the rational predictors specific to the occupational samples are presented in Table 2. Also shown are Beta weights for the moderator scales and the multiple correlation coefficients computed in each experimental sample.

The scales comprising the transsituational moderator developed on the basis of the combined difference scores for the three experimental samples are presented in Table 3, together with Beta weights for the moderator scales and the multiple correlation coefficient computed for the combined experimental samples.

Table 4 is a comparison of the scales selected for the specific and for the transsituational moderators. Scales are designated by a plus (+) or minus (-) in the appropriate column to indicate the sign of the regression coefficient. The scales forming the specific moderators were found to be quite different. The three specific moderators did not have one common scale with the same sign. These results are similar to those which Ghiselli (1963b) obtained with items when he developed moderators through item analysis. Ghiselli concluded that moderators appear to be highly specific.

Comparison of the transsituational moderator with the specific moderators also revealed little overlap. Lack of overlap in the composition of composite moderators does not preclude the effectiveness of the transsituational moderator. An analogous situation obtains in predictor research when the effectiveness of separate regression equations for subgroups is compared with the regression for the total group. The extent to which the variables add to prediction may differ in the subgroup and the total group, and test selection may lead to regression equations with little overlap when a specified number of variables are selected from a pool of variables. Prediction with regression equations developed on the total group may be as efficient as separate regression equations for the subgroups (Horst, 1959; Eells, 1961). In the present study, the lack of overlap could well be due to the smallness of the samples in which the specific scales were developed.

The scales comprising the specific moderators for the G scale, in each occupational experimental sample, are presented in Table 5. Table 5 also includes the corresponding Beta weights for the moderator scales and the multiple R's computed for each of the experimental samples.

Table 2

SCALES COMPRISING THE SPECIFIC MODERATORS FOR THE RATIONAL PREDICTORS, REGRESSION COEFFICIENTS, AND MULTIPLE CORRELATION COEFFICIENTS FOR THE CLERICAL, NONSKILLED, AND SKILLED EXPERIMENTAL SAMPLES

Sample	Predictor	Moderator Scales	Regression Coefficients	R
			B	
Clerical (N = 49)		Hs	-.189	
		Pt	-.015	
		Ma	-.403	
	Q	Ie	-.199	.44
		Ca	.291	
		Ac	-.184	
		Fe	-.217	
Nonskilled (N = 43)		G	-.273	
		Hs	-.593	
		Hy	.404	
	M	Pd	-.286	.61
		Ie	.209	
		SW	.467	
		Ac	.248	
Skilled (N = 42)		G	.394	
		Hs	.412	
		Pd	.113	
		Mf	.240	
		Pt	-.749	
	S	Sc	.375	.70
		Ma	.213	
		Ie	.242	
		Pa	.454	
		SW	-.265	
		Om	.384	

Table 3

SCALES COMPRISING THE TRANSSITUATIONAL MODERATOR FOR THE RATIONAL PREDICTORS, REGRESSION COEFFICIENTS, AND MULTIPLE CORRELATION COEFFICIENT FOR THE COMBINED EXPERIMENTAL SAMPLES (N = 134)

Moderator Scale	Regression Coefficient	R
	B	
D	.116	
Pa	-.140	
Pt	-.164	.25
Sc	.117	
Ps	.193	

The scales comprising the transsituational moderator for G, developed on the basis of the combined difference scores for the three experimental samples, are presented in Table 6. Table 6 also includes the corresponding Beta weights for the moderator scales and the multiple R computed for the combined experimental samples.

Table 7 is a comparison of the scales selected for the specific and transsituational moderators for the G scale. The scales selected are designated by plus (+) and minus (-) to indicate the sign of the regression coefficient. Examination of this table also reveals that the scales that form the specific and transsituational moderators are quite different. Furthermore, the data presented in Table 7, like the data presented in Table 4, indicate no discernable trend in the functioning of personality and interest scales as moderators.

Table 4

COMPARISON OF THE SCALES SELECTED FOR THE SPECIFIC AND TRANSSITUATIONAL MODERATORS OF THE RATIONAL PREDICTORS

	Moderator Scales																		
Sample	G	Hs	D	Hy	Pd	Mf	Pa	Pt	Sc	Ma	Ie	Ps	En	Ca	SW	Ac	Om	Ol	Fe
Clerical		-						-		-	-	-		/					
Nonskilled	-	-		/	-						/				/	/			
Skilled	/	/			/	/		-	/	/	/	/			-		/		
Combined			/				-	-	/			/							

Table 5

SCALES COMPRISING THE SPECIFIC MODERATORS FOR THE G SCALE, REGRESSION COEFFICIENTS, AND MULTIPLE CORRELATION COEFFICIENTS FOR THE CLERICAL, NONSKILLED, AND SKILLED EXPERIMENTAL SAMPLES

Sample	Predictor	Moderator Scales	Regression Coefficients	R
			B	
Clerical (N = 49)		G	-.581	
		Hs	-.671	
		D	.049	
		Mf	.469	
	G	Pa	.189	.65
		Ma	-.275	
		Ps	.190	
		Ca	.329	
		SW	-.312	
Nonskilled (N = 43)		G	-.210	
		Pd	-.277	
		Pa	-.226	
	G	Ps	.172	.60
		En	-.396	
		Ac	1.245	
		Om	-1.178	
Skilled (N = 42)		G	.225	
		Hs	-.385	
		Hy	.364	
		Mf	.189	
	G	Ma	.268	.66
		Ie	.447	
		Ps	.546	
		SW	-.216	
		Om	.408	

Table 6

SCALES COMPRISING THE TRANSSITUATIONAL MODERATOR FOR THE INTELLIGENCE (G) SCALE, AND THE MULTIPLE CORRELATION COEFFICIENT FOR THE COMBINED EXPERIMENTAL SAMPLES (N = 134)

Moderator Scales	Regression Coefficients	R
	B	
Hs	-.139	
Sc	.116	
Ac	.312	.26
Om	-.391	
OL	.110	
Fe	-.220	

EFFECTIVENESS OF EMPIRICAL MODERATORS FOR Q, M, AND S

The validity coefficients of Q, M, and S computed in the cross-validation subsamples formed on the basis of the specific moderators and the transsituational moderator are shown in Table 8. The subgroups--upperthird (U3), lower third (L3), upper half (U2) and lower half (L2)--were formed on the basis of the moderator scores. Subgroups with lower moderator scores were predicted to have higher validity coefficients than the subgroups with higher moderator scores, since lower moderator scores should indicate higher predictability and higher moderator scores lower predictability.

Compare first the validity coefficients for subgroups formed on the basis of the specific moderators. None of the differences between the validity coefficients for L3 and U3, or for L2 and U2, was significantly different from zero at the 5% level (one-tailed test)[2] [3]. The validity

---

[2] One-tailed tests were used unless specified otherwise.

[3] Fisher's z-transformation technique was used for all tests of significance.

Table 7

COMPARISON OF THE SCALES SELECTED FOR THE SPECIFIC AND TRANSSITUATIONAL MODERATORS OF THE G SCALE

	Moderator Scales																		
Sample	G	Hs	D	Hy	Pd	Mf	Pa	Pt	Sc	Ma	Ie	Ps	En	Ca	SW	Ac	Om	Ol	Fe
Clerical	-	-	/			/	/			-		/		/	-				
Nonskilled	-				-		-					/	-			/	-		
Skilled	/	-		/		/				/	/	/			-		/		
Combined		-							/							/	-	-	-

Table 8

THE VALIDITY COEFFICIENTS FOR Q, M AND S COMPUTED FOR THE CROSS-VALIDATION SUBSAMPLES FORMED ON THE BASIS OF THE SPECIFIC MODERATORS (SM) AND THE TRANSSITUATIONAL MODERATOR (TM)

	Clerical				Nonskilled				Skilled			
	SM		TM		SM		TM		SM		TM	
Sub-Sample	N	r_{QC}	N	r_{QC}	N	r_{MC}	N	r_{MC}	N	r_{SC}	N	r_{SC}
U3	16	.28	16	-.25	15	-.11	15	.15	13	.10	12	-.43
U2	23	.15	25	-.13	22	-.08	22	.06	18	.27	19	.15
L2	23	.17	21	.34	22	.10	22	-.04	19	.25	18	.42[a]
L3	15	.51[a]	14	.55[a]	15	.13	15	-.02	13	.28	13	.59[a]
Total	46	.11	46	.11	44	.08	44	.08	37	.36[a]	37	.36[a]

[a]Significantly different from zero at 5% level (one-tailed test).

coefficient for L3 of the clerical sample was significantly different from zero at the 5% level.

Tests of statistical significance indicated that only the specific moderator developed on the clerical sample identified more and less predictable subgroups upon cross validation. There was some tendency for the specific moderator scores to be related to the validity coefficients.

In subgroups formed on the basis of the transsituational moderator, differences between validity coefficients for L3 and U3 of the clerical sample and the skilled sample were found to be significantly different from zero at the 5% level. None of the differences between the validity coefficients for L2 and U2 was significantly different from zero at the 5% level. The validity coefficient in L3 of the clerical sample and validity coefficients in L3 and L2 of the skilled sample were significantly different from zero at the 5% level. Again, some tendency for the moderator scores to be related was noted in the clerical and skilled samples. These results provide some indication that it is possible to develop a transsituational moderator that identifies more and less predictable subgroups for different occupational groups when different predictors are used to predict the same kind of criterion.

The data were examined to determine whether such differential predictability as was found could be attributed to the differential predictability of handicapped and nonhandicapped individuals. Chi square analyses of the data for the specific and transsituational moderators indicated that disability and moderator score (upper half vs lower half) were independent.

EFFECTIVENESS OF THE EMPIRICAL MODERATORS OF G

Table 9 shows the validity coefficients of G computed in the cross-validation subsamples--U3, L3, U2, L2--formed on the basis of the specific moderators and the transsituational moderator.

In the subgroups formed on the basis of the specific moderators, none of the specific moderators was effective on cross validation in identifying more and less predictable subgroups.

In subgroups formed on the basis of the transsituational moderator, none of the differences between the validity coefficients for L3 and U3, or for L2 and U2, was significantly different from zero at the 5% level. However, the validity coefficient in L2 of the clerical sample was significantly different from zero at the 5% level, and in L2 of the skilled sample at the 1% level. The three values of L3 were positive and higher than the corresponding values of U3, and two of the three values of L2 were positive and higher than the corresponding values of U2. These results would appear to indicate that it is possible to develop a transsituational moderator that identifies more and less predictable subgroups for

Table 9

THE VALIDITY COEFFICIENTS FOR G COMPUTED FOR THE CROSS-VALIDATION SUBSAMPLES FORMED ON THE BASIS OF THE SPECIFIC MODERATORS (SM) AND THE TRANSSITUATIONAL MODERATOR (TM)

	Clerical				Nonskilled				Skilled			
	SM		TM		SM		TM		SM		TM	
Sub-Sample	N	r_{GC}	N	r_{GC}	N	r_{GC}	N	r_{GC}	N	r_{GC}	N	r_{GC}
U3	15	.38	16	-.12	15	-.10	15	.22	13	.29	13	.20
U2	23	.20	25	-.09	22	.12	22	.13	19	.39	20	.23
L2	23	.06	21	.36[a]	22	-.02	22	-.03	18	.23	17	.61[b]
L3	15	.14	14	.03	15	-.14	15	.26	12	.30	12	.40
Total	46	.20	46	.20	44	.09	44	.09	37	.41[a]	37	.41[a]

[a] Significantly different from zero at 5% level (one-tailed test).

[b] Significantly different from zero at 1% level (one-tailed test).

different occupational groups when the same predictor is used to predict the same kind of criterion.

Chi square analysis of these data again indicated that disability and moderator score were independent.

Tables 8 and 9 show that neither specific nor transsituational moderators identified more and less predictable subgroups of the nonskilled sample. This result was expected, since G is not usually an effective predictor of performance in nonskilled jobs. The negative results for M can be explained similarly. In view of the heterogeneity of the nonskilled sample in terms of job functions, M was in all likelihood not related to performance in enough of the jobs comprising the nonskilled sample to provide enough cases from which to select a predictable subgroup.

Means and standard deviations of predictors and criterion in the cross-validation subsamples formed on the basis of specific and transsituational moderators are presented in Tables 10 and 11.

IMPLICATIONS

This research illustrated a possible method of improving the use of selected aptitude measures as predictors by identifying subgroups of individuals for which the aptitude measures are especially effective. Findings may be contrasted with those of Ghiselli (1963b) that moderators appear to be highly specific. With two different tests predicting the same criterion for a given group, and with the same test predicting different though similar criteria for two different groups, the items which formed the moderators were quite different. A comparison of the specific moderators developed from the MMPI, SVIB, and the G scale of the GATB in the present study shows a similar pattern. With different tests predicting the same kind of criterion in different groups, the scales which formed the moderators were quite different. On the basis of these results, conclusion as to specificity of the moderators might have been the same as Ghiselli's. However, this specificity does not appear to preclude the development of an empirical moderator that is transsituational. Lack of overlap in the items or scales that comprise moderators for different situations does not appear to be sufficient evidence from which to draw the general conclusion that moderators are necessarily specific.

The significance of the results of this study should be interpreted with caution. Although evidence does suggest that different types of moderator are identifying different individuals, all of whom are predictable, it should be noted that small samples were used in the development of the specific moderators. Sampling error could explain the difference in composition of the moderators, and the apparent discrepancy in their effectiveness. It would seem reasonable that the specific moderators would tend to

Table 10

MEANS AND STANDARD DEVIATIONS OF Q, M, S, AND THE CRITERION (C) COMPUTED IN SUBSAMPLES OF THE CROSS-VALIDATION SAMPLES FORMED ON THE BASIS OF SPECIFIC (SM) AND TRANSSITUATIONAL (TM) MODERATORS

			SM				TM			
Sample	Scale		U3	U2	L2	L3	U3	U2	L2	L3
Clerical	Q	N	16	23	23	15	16	25	21	14
		Mean	116	115	127	128	117	118	124	125
		SD	16.7	16.5	18.7	18.5	17.9	16.7	20.3	20.5
	C	Mean	15.4	15.8	14.7	14.5	15.5	15.3	15.2	15.6
		SD	5.50	4.81	4.08	3.87	4.12	4.32	4.65	4.77
Non-skilled	M	N	15	22	22	15	15	22	22	15
		Mean	79	81	76	73	75	75	82	79
		SD	24.6	24.1	22.9	24.6	22.6	23.4	23.6	23.4
	C	Mean	14.9	14.6	15.0	14.65	13.8	14.8	14.7	14.9
		SD	3.84	3.91	3.73	3.62	3.20	3.23	4.34	4.49
Skilled	S	N	13	18	19	15	12	19	18	13
		Mean	106	106	105	103	104	105	106	110
		SD	19.2	19.8	15.1	16.3	14.7	18.1	17.3	16.5
	C	Mean	14.3	15.1	15.1	15.1	16.3	16.4	13.8	14.7
		SD	4.11	3.77	4.35	4.40	4.11	4.02	3.65	3.56

Table 11

MEANS AND STANDARD DEVIATIONS OF G AND THE CRITERION (C) COMPUTED IN THE CROSS-VALIDATION SUBSAMPLES FORMED ON THE BASIS OF SPECIFIC (SM) AND TRANSSITUATIONAL (TM) MODERATORS

			SM				TM			
Sample	Scale		U3	U2	L2	L3	U3	U2	L2	L3
Clerical	G	N	15	23	23	15	16	25	21	14
		Mean	106	113	119	119	116	116	111	112
		SD	17.2	17.2	13.1	14.3	10.5	11.5	19.8	16.9
	C	Mean	14.9	14.9	15.6	15.3	14.8	15.9	14.6	14.6
		SD	4.61	4.86	4.00	4.28	4.94	4.81	3.91	3.79
Non-skilled	G	N	15	22	22	15	15	22	22	15
		Mean	94	95	95	92	108	102	88	85
		SD	19.2	22.0	15.5	16.4	16.9	17.2	17.9	17.6
	C	Mean	14.2	14.7	14.9	15.1	15.3	14.8	14.9	14.9
		SD	3.63	3.52	4.09	3.48	4.34	4.42	3.12	3.27
Skilled	G	N	13	19	18	12	13	20	17	12
		Mean	108	106	98	93	96	99	106	100
		SD	14.4	17.3	14.4	13.3	14.2	17.3	14.4	9.6
	C	Mean	15.8	15.8	14.3	14.4	15.6	15.5	14.6	13.5
		SD	4.23	4.23	3.73	3.39	3.98	3.90	4.19	3.90

be more effective than the transsituational moderators. In this present study, there was a tendency for the transsituational moderators to show up as more effective. The use of comparable sample sizes for the empirical development of specific and transsituational moderators would give a better assessment of the relative effectiveness of these moderators and the extent to which they show common scales of items.

REFERENCES

Anderson, L. Bryce and Spencer, Patricia. Personal adjustment and academic predictability among college freshmen. Journal of Applied Psychology, 1963, 47, 97-100.

Carlson, R. E., Davis, R. V., England, G. W., and Lofquist, L. H. Minnesota Studies in Vocational Rehabilitation: XIII. The measurement of employment satisfaction. Bulletin 35, May, 1962.

Carlson, R. E., Davis, R. V., England, G. W., and Lofquist, L. H. Minnesota Studies in Vocational Rehabilitation: XIV. The measurement of employment satisfactoriness. Bulletin 37, December 1963.

Dvorak, Beatrice J. The General Aptitude Test Battery. Personnel Guidance Journal, 1956, 35, 145-152.

Eells, Kenneth. How effective is differential prediction in three types of college curricula? Educational and Psychological Measurement, 1961, 21, 459-471.

Ghiselli, E. E. Differentiation of individuals in terms of their predictability. Journal of Applied Psychology, 1956, 40, 374-377.

Ghiselli, E. E. Moderating effect and differential reliability and validity. Journal of Applied Psychology, 1963, 47, 81-86. (b)

Hathaway, S. R., and McKinley, J. C. Minnesota Multiphasic Personality Inventory Manual. New York: Psychological Corporation, 1951.

Horst, P. A. Relationship between preadmission variables and success in college. University of Washington, Division of Counseling and Testing Services: Seattle, Washington, 1959.

Strong, E. K., Jr. Strong Vocational Interest Blank Manual. Palo Alto: Consulting Psychologists Press, 1959.

U. S. Department of Labor, Bureau of Employment Security. Dictionary of Occupational Titles, Vol. 1. Washington, D. C.: U. S. Government Printing Office, 1949.

U. S. Department of Labor, Bureau of Employment Security. Guide to the Use of General Aptitude Test Battery. Washington, D. C.: U. S. Government Printing Office, 1962.